

REMARKS

The Examiner imposed a restriction/election as follows:

- I. Claims 1-7, drawn to a propellant composition, classified in class 149, subclass 96+.
- II. Claims 8-16, drawn to a method of manufacturing, classified in class 264, subclass 3.3.
- III. Claims 17 and 18, drawn to a propellant grain, classified in class 102, subclass 281+.

In a telephone conversation with Mr. Todd E. Garabedian on December 11, 2000 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-7. Applicants herein affirm this election.

Accordingly, claims 1-7 remain in the application for consideration. Claims 1-7 are herein amended. In conformance with 37 CFR §1.121(c)(1)(ii), the amendments to claims 1-7 may be found in Appendix A of this Reply. Claims 8-18 are withdrawn from further consideration and are herein canceled without prejudice to Applicants' right to pursue the subject matter of the canceled claims in a future patent application claiming priority herefrom under 35 U.S.C. §120. New claims 19-24 are herein added, and claim other shapes of perforations. Support for such new claims may be found in the specification at page 6 line 21, and continuing to page 7 lines 4. Accordingly, Applicants submit that new claims 9 - 24 do not add new matter.

Rejections under 35 USC §112

Claims 1-7 were rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as his invention.

Claims 1-7 are herein rewritten to clarify that the invention is a lacquer composition that is useful as a propellant. Support for such an amendment is found in the specification at page 7 lines 11-16 which states, “the propellant of the present invention is made from a lacquer comprising (a) an organic solvent; (b) a stabilizer; (c) optionally, an energetic plasticizer; (d) optionally, a nonenergetic plasticizer; (e) optionally, water; and (f) optionally, additional additives; and the balance being nitrocellulose.” Accordingly, no new matter has been added. Applicants now submit that this rejection is overcome.

Rejections under 35 USC §102

Claims 1-7 were rejected under 35 USC §102(b) as being anticipated by U.S. Patent No. 3,163,567 ('567) to Silk. Applicants respectfully traverse the rejection.

Silk teaches a nitrocellulose lacquer comprising a potassium salt, ethyl acetate, diphenylamine, and nitroglycerine (col. 5 lines 55-70). More particularly, Silk teaches a process for preparing disc-like powder particles from the lacquer (see, e.g., col. 7 line 32 or 53, and col. 8 lines 12, 40, or 68).

Applicants herein amend Claims 1-7 to recite, in part, that the lacquer composition is processed into perforated propellant grains. Support for such amendments may be found in the specification at page 6 line 19 to page 7 line 4 where it is stated:

It has now been found that perforated propellant grains may be manufactured continuously from a specific lacquer composition in a safe, cost-effective, and efficient manner. The continuous preparation of a perforated propellant produces a strand having a generally cylindrical shape with one or more inner concentric hollow cylinders (termed perforations) arranged parallel to the longitudinal axis of the strand.

Accordingly, Applicants submit that no new matter is added herewith. Further, Applicants submit that neither Silk '567 nor any of the other cited references teach nor disclose processing of a propellant lacquer into perforated propellant grains as disclosed and claimed in the amended claims. Accordingly, Applicants submit that this rejection is traversed.

Rejections under 35 USC §103

Claims 1-7 were rejected under 35 USC §103(a) as being unpatentable over U.S. Patent No. 4,243,442 ('442) to Armantrout. Applicants respectfully traverse the rejection.

The Armantrout '442 discloses the preparation of a double base propellant binder comprising nitrocellulose dissolved in acetone and a plasticizer. The mixture is mixed with dry sparge air mixing, and the mixture is stripped of water by continued dry sparge air mixing and application of heat.

In contrast, claim 1 of the present invention recites a lacquer composition useful as a propellant, comprising: from about 15 to about 70 wt% of an organic solvent; from about 0.1 to about 2.5 wt% of a stabilizer; optionally, from about 0% to about 40 wt% of an energetic plasticizer; optionally, from about 0 to about 10 wt% of a nonenergetic plasticizer; optionally, from about 0 to about 10 wt% water; optionally, from about 0 to about 15 wt% of additional additives; balance being nitrocellulose; all weight percents based on the total weight of the composition, and wherein the lacquer composition has a viscosity of less than 10 million

centipoise when processed; and wherein the lacquer composition is processed into perforated propellant grains.

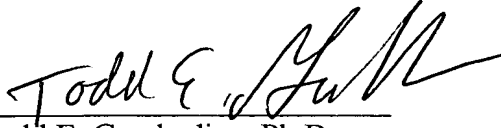
Applicants submit that the present invention is not obvious in view of Armantrout '442. Armantrout '442 does not disclose or suggest processing the propellant composition into perforated propellant grains, as particularly disclosed and claimed by Applicants in amended claims 1 and 7. Armantrout '442 further does not disclose, suggest, or even recognize that the burn characteristics of a propellant grain may be modified by the shape and/or geometry of the grain itself. In contrast, Applicants explicitly disclose that perforated propellant grains of the present invention possess superior ignition and flame permeability. Such advantages are neither taught nor suggested by Armantrout '442. Accordingly, Applicants submit that the present invention as now claimed is not obvious over Armantrout, and that this rejection is overcome.

Applicants submit that the claims are now in condition for allowance and respectfully request reconsideration and early favorable action by the Examiner.

If the Examiner has any questions or believes that a discussion with Applicants' attorney would expedite prosecution, the Examiner is invited and encouraged to contact the undersigned at the telephone number below.

Respectfully submitted,
William L. O'Meara et al.

Date:
WIGGIN & DANA
One Century Tower
New Haven, CT 06508-1832
Telephone : (203) 498-4483
Facsimile: (203) 782-2889



Todd E. Garabedian, Ph.D.
Reg. No. 39,197
Attorney for Applicants

16 APR 2001